THE SCOPE

JANUARY

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THE SCOPE

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Editorial

The enthusiasm which buoys us up, the enthusiasm which accompanies mastership will not be generated in an idle brain, or by a half-hearted effort. It takes ginger, grit, pluck and pep to do the trick. And you can't generate these qualities by a low temperature. Do not depreciate yourself; you will find plenty of others to do that. Rather swell up a bit, add a pinch of self conceit, and you will find yourself with a lot more self-assurance. If you consider yourself as a worm of the dust you must expect people to trample on you. If you make a door-mat of yourself, people are sure to wipe their feet on you. If you make a man feel worthless, he will act worthlessly.

Stand on your own feet. Live your own life. Think out your own course. There are few, if any, questions that ever confront a human being that cannot be solved by that being if he thinks hard enough, and long enough, and straight enough. To every problem there is a key and after finding that, everything is simple. Don't be idle, be willing to pay the sacrifices. Effort will overcome many obstacles.

The chap who asks another to help him with his work is cheating himself. He is robbing himself of mental training and discipline. He is weakening his own faculties. He is handicapping himself for the

problems of life which will finally present themselves when he must make his own way, without outside help, in their solution.

Don't let the enthusiasm which led you into your chosen work wane because you are unable to accomplish a year's work in a day. No great feat was ever accomplished where the individual lacked the courage to utilize the power of thought, which his Creator endowed him with the day he made his entrance into this world.

Make the most of what has been given you. Spend a few moments each day alone with your thoughts. Don't ask the world to psycho-analyze you, do it yourself. If you are honest with your own rating, it will be a simple problem to adjust yourself to conditions. Regardless of whether a man digs streets for a living, or another discusses business from behind a hand-carved mahogany desk, nine chances to one neither are satisfied with their lot in life. Why? There's an old saying, "The grass is always greener in the other fellow's yard." This applies to more than half the people in this world today. If they could only walk in so and so's shoes, they would be better fitted for his type of work. Were they fortunate enough to be offered such an opportunity, I daresay the rightful owner would have to resume his responsibilities in shorter time than he had anticipated.

We all have certain capabilities, qualifications, etc. This does not mean that we are infallible. If we learn to do one job and do it well, we surpass the man who dabbles in a number of things, but becomes proficient in none. Whether a man has a title or two before his name and several degrees after it, the world is not interested in the number of sheepskins he has, but in the service he renders humanity.

Retain just enough ego to pride yourself on your courage to hang on in spite of opposing forces, but season that egoism with a grain of salt—it's much more appetizing.

Eye Eye Suh!

M. Ossen

Lenses were invented in 250 B. C.; but spectacles weren't invented until 1285 with Armati, an Italian, generally getting the credit.

There are about 25,000 Optometrists in the country.

Color blindness occurs in about 4% of the males and 1/5 of 1% in the stronger sex.

About 50 millions of dollars are spent annually for services of Optometrists and cost of glasses.

There are 14,385 Opticians in the United States. 606 of these are women. In 1920 there were 889 women out of 12,632.

Glasses, in the 16th century, were regarded by the masses as devices of the devil. They only cost $75 a pair at that time. (Can you blame the masses?)

90% of the Egyptians suffer with Trachoma.

The Army and Navy require a minimum vision of 20/100 in each eye correctable to 20/40 in either eye.

30% of the population in the United States have eye-glasses, 40% more need them.

Of all the eye-glass wearers, 63% own one pair, 24% own two pair and 13% own three pair.

One half of the 38 million gainfully employed are handicapped by poor vision (I didn't know that many were employed).

The B. V. I., by radio and newspaper advertisements, is making the 40,000,000 people it reaches by these means very eye conscious. (That ought to make you study weekends). (By the way, this is not an advertisement).

Vision of, at least, 20/50 in one eye and 20/100 in the other, without aid of glasses, is required, to be a safe motorist (as women are never safe drivers this does not apply to them).

There are seven Physicians and four Dentists to every Optometrist.

Dynamic Skiametry

IVAN S. NOTT, Lumsden Bldg.,
Toronto, Canada

(*Continued from December issue*)

For some years after Cross published his volume on dynamic skiametry a contentious discussion raged among many writers, both medical and non-medical, on the value of dynamic skiametry. Cross contended that the extra plus found by his method was latent hyperopia, spasm of accommodation, subnormal accommodation, paresis of the accommodation, premature presbyopia, or presbyopia and that part or all of it should be incorporated in the final Rx. We now know that most or all of this extra plus found by the Cross technique is simply the amount accommodation will relax when convergence is normaliy active together with a lag of accommodation behind convergence of about one half to three quarters of a diopter. Let us try to prove this. If a person who is emmetropic, or made so with lenses, is able to read small type at, say, one-third of a meter, it would appear that he is focusing or accommodating exactly at this distance in order to see clearly. If he is accommodating exactly at 13 inches that point must be conjugate with his retina and as skiametry is based upon the laws of conjugate foci, the examiner would obtain a neutral shadow at that point i.e., *thirteen inches.* In other words with fixation and observation at the same point, with the patient able to see clearly, reasonably small print, the observer should get a neutral shadow.

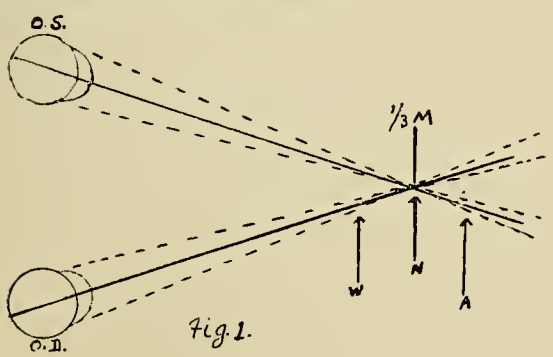


Fig. 1.

In figure 1, if the subject under test is accommodating for the point on which he is converging, i.e., thirteen inches, the observer would get a "neutral" shadow at N, a "with" shadow at W and an "against" shadow at A. The solid lines represent convergence and the dotted lines represent accommodation.

But the observer does not get a neutral shadow at N which proves beyond any doubt that the subject is not accommodating for the point at which he is converging. A "with" motion is seen, which usually takes about plus 1.50 D.S. to neutralize, provided we go to the reversal point. Sheard in his volume on Dynamic Skiametry, asks: "Is not dynamic skiametry as practised with fixation and observation at the same point, and lens quantities added until reversal occurs, simply an objective method of obtaining relative accommodations"? He answers his own query with: "We believe that it is." Furthermore, Sheard calls this extra plus finding the "negative relative accommodation". Or to put this phrase into the writer's own words, this extra plus lens finding is the amount that the accommodation will relax when associated with the act of convergence, due allowance being made for the lag of accommodation behind convergence.

This accommodation can be further relaxed by placing prisms base in before the eyes under test or the accommodation can be stimulated reflexly by prisms base out. I recommend that the student make such tests and observe the results.

Realizing that dynamic skiametry with observation and fixation at the same point, and proceeding to the point of reversal of shadow, gave him an erroneous finding, Sheard recommended a method that reveals not only the accommodative demands, but also takes into consideration the relationship between accommodation and conver-

gence. Briefly, it consists in leaving the spherical part of his static findings before the patient's eyes and with observation and fixation at the same point, he then proceeds to add spherical lens power, and if necessary cylinders, until the shadows in both eyes are neutral. Sheard does not proceed to the point at which there is a reversal of shadow and then drop back a plus 0.25 sph., *but adds only sufficient lens power to produce no shadow.* Sheard says: "This gives, as we interpret the findings, some indication of the accommodative assistance demanded at this point under the conditions of convergence—i.e., whether convergence, necessary for binocular single vision be accommodative, fusional or a combination which actually exist."

Sheard was the first to show us that there is a normal lag of accommodation behind convergence of about one-half to three-quarters of a diopter. From his dynamic findings he subtracts this amount in hyperopia and adds it in myopia. After this allowance (lag) has been taken into consideration, if the static and dynamic findings are in agreement, Sheard says that he believes " he is justified in the conclusion that the function of accommodation is adequately served, and that there is a little latent error, spasm of accommodation, and so forth."

Using this method, if the dynamic skiametric findings show more plus lens than the static findings, due allowance being made for the lag of acc., behind con.,—then latent hyperopia, spasm, subnormal accommodation, and so on, would be suspected and an increase of plus lenses is generally advisable, at least for near work.

This writer believes that Sheard's method is of greater practical value than the Cross interpretation, but we find difficulty and confusion in knowing just when there is no shadow (neutral). Probably it is because we have practised, for so many years, the method of getting an "against" shadow in both static and dynamic skiametric procedures and then reducing to neutrality, that we experience difficulty. For example suppose static findings show O.U. plus 1.00 D.S., dynamic skiametry with Sheard's method shows a "with" motion, and we add plus 0.50 D.S., then plus 0.75 D.S., then plus 1.00 D.S. All of these may show no motion and the writer is in doubt which lens is correct. This is particularly true where there is any astigmatism. We know theoretically that we should stop when there is no shadow, but practically this is not so easily accomplished. By adding plus 1.25 D.S. to our hypothetical case there still may be no shadow, but a reversal likely occurs with plus 1.75 D.S.. This, of course, is the Cross technique, which shows plus 1.50 D.S. more than the static findings.

We have, therefore, developed a technique of our own, which is exactly the same in principle as that advocated by Sheard. We believe it is simpler and easier to apply.

It is the writer's belief that Sheard's discovery of a lag of accommodation behind convergence is a most important one. It opened the way to a better and clearer understanding of dynamic skiametry, and furnishes us with an objective method of examination that, in the author's opinion, is extremely valuable.

We will not here attempt an explanation of why there should be a lag of accommodation behind convergence. Be the cause what it may, it is a fact that eyes not presbyopic but emmetropic or made so with lenses, and having a normal acc. con. balance at one-third of a meter, show that the acc. is adjusted for about sixteen inches when fixation is at thirteen inches. When fixation is at sixteen inches, acc. is adjusted for about twenty inches. We suggest that the student actually make these experiments so that he or she may see for himself or herself that—*except in cases of abnormal balance at near —no matter where the fixation point be placed, a neutral shadow will be found at a greater distance from the patient's eyes and this (lag of acc. behind con.) amounts to about one-half of a diopter.*

This lag of acc. behind con. we believe to be normal. Hence our technique of practicing dynamic skiametry is to make

our observation behind the point of fixation equivalent to the normal lag. That is to say, if—Fixation is at 10 inches we make observation at 12 inches.

Fixation at 13 inches we make observation at 16 inches.

Fixation at 16 inches we make observations at 20 inches.

Fixation at 18 inches we make observation at 22 inches.

Fixation at 20 inches we make observation at 26 inches.

This method of using dynamic skiametry, we repeat, is in principle exactly the same as that advocated by Sheard, but as the lag of acc. behind con. is allowed for by making observation behind fixation to the extent of the normal lag, no deductions in lens value from the dynamic skiametric findings are necessary. This method also permits the examiner to make his dynamic test in the same manner as his static test, for he can put on sufficient plus to give an against shadow, and then drop back until neutralization is reached. Or in the case of myopia start with an under correction (against shadow) and slowly add minus to neutralization.

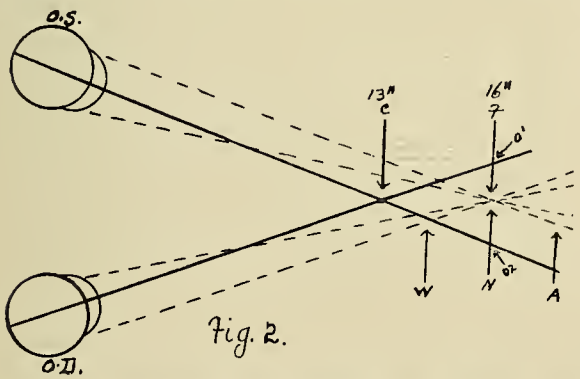


Fig. 2.

Fig. 2 shows the optical principles involved in this test. The solid lines represent con. with fixation (convergence) (C) at thirteen inches. The dotted lines represent the acc. (F) focusing at sixteen inches. A "neutral" shadow will be found at N, a "with" shadow at W, and an "against" shadow at A.

In a case of hyperopia of, say plus 1.00 D. with a normal balance for distance and near, the subject not being presbyopic, we would obtain dynamic skiametric findings using the—

Cross interpretation plus 2.50 D.S.
Sheard interpretation plus 1.50 D.S.
Nott interpretation plus 1.00 D.S.

From the Cross method plus 1.50 would have to be deducted for comfortable and efficient binocular vision of which plus 0.50 D. is lag of acc. behind con. and the balance of plus 1.00 is relaxed accommodation.

From the plus 1.50 finding of Sheard's, plus 0.50 D. would be deducted for the lag of acc. behind con.

From the Nott interpretation there is no deduction or allowance necessary. The findings are the same as the static test.

As in static skiametry so it is with dynamic skiametry that observation must be made as close as possible to the visual axis to eliminate false astigmatism due to oblique (angular) observation. This is very important if one wishes to obtain accurate findings. In static skiametry the writer uses a macular reflectoscope for monocular examination and for binocular examination he uses his right eye to examine patient's right eye and his left to examine patient's left eye. In the method of dynamic skiametry we are suggesting in this essay we follow a procedure which allows us to make our observation as close as possible to patient's visual axes.

This is illustrated in Fig. 2. The convergence fixation point is at C, so observation for the right eye is made at the point 01, which is three inches behind C, but directly along patient's line of fixation. For the left eye observation is made at the point 02. To do this we take a card with type of average size arranged around an aperature in the card. The aperature in the card is about 22 m/m. For our personal use we prefer a smaller aperature. On the reverse side of the card a number of spots are arranged around the margin of the aperature. (See A. O. Co. test card No. 19853 B).

Such a card provides adequate fixation for convergence and accommodation and

permits the examiner to make his observation through the hole in the card and thereby be very close to patient's visual axes.

In presyopia, we usually add to the static findings that amount of plus lens power which would be expected from the age of the patient and then proceed to change it to give a neutral shadow with observation behind convergence equal to one-half diopter lag. For patients with poor visual acuity larger type can be used for fixation. With small children and illiterates we use the dots and ask them to count them. The author has a variety of cards to use for fixation to suit the type of patient being examined. The essential considerations as we see them, are: (1) Be certain that the patient's accommodation and convergence are active, (2) make observation as near as possible to patient's visual axis, and (3) make the proper allowance for the normal lag of accommodation behind convergence.

This method is a very rapid one, as we usually leave the static findings in place, and after obtaining neutrality removing the cylinders to see that astigmatism is the same for near as well as infinity, and to check up on the axis. Indeed the less the retinoscopic light is projected into the patient's eyes the better, because the glare from the light does interfere with fixation and therefore the examiner should change from one eye to the other and sweeping the light across and up and down make the lens changes while the light is off the eyes.

Using this observation behind fixation method in pre-presbyopes where there is a normal relationship between acc. and con. the dynamic skiametric findings will be the same as a carefully made static skiametric test. In other words with the static findings before the eyes a neutral shadow will be found with fixation at 16 inches and observation at 20 inches. By receding two inches (at 22 inches)) an "against" shadow will be observed and by advancing two inches (at 18 inches) a "with" shadow will result. This, as we interpret it, means that accommodation is lagging behind convergence normally.

In pre-presbyopes where plus is necessary in order to produce a neutral shadow, we expect to find an esophoric condition in the near point tests, because the accommodation is trying to lag behind convergence more than normal. Further we expect to find a long plus sphere blur-out, a short minus sphere blur-out, a long prism base out blur-out and a short prism base in blur-out. Thus, other near point tests are in agreement with the extra plus as obtained by dynamic skiametry.

When we find that minus sphere has to be added in this method of dynamic skiametry to the static findings, such findings indicate that acc. is not lagging behind con. in the normal amount and we expect to find a high exophoria at near or probably a low positive reserve convergence or both indicating that the patient will not tolerate plus lenses to the extent of the static or subjective findings. Further we expect to find a low plus sphere blur-out and a high minus sphere blur-out, a low prism base out blur-out and a high prism base in blur-out. The dynamic findings, therefore, are in agreement with other near point tests and suitable orthoptic training or/ and prisms given the patient if a successful result is to be obtained.

In presbyopia as stated before we arbitrarily add plus sphere consistent with what is ordinarily expected for the age of the patient and proceed to make the necessary changes to give neutrality—fixation at 16 inches and observation at 20 inches, unless there is some reason why 16 inches is not the reading or working distance for the patient. As we believe it is normal for acc. to lag behind con. for pre-presbyopes we also believe the same condition should exist for presbyopes and therefore our dynamic test for presbyopes is the same as for pre-presbyopes and the findings indicate the proper reading correction or add for reading. The writer places a great deal of reliance on his dynamic skiametry in presbyopia. We make this statement after many years of experience.

If the theory of acc. lag is right—and the

writer is convinced that it is—then we believe that we have a procedure in dynamic skiametry which is fundamentally correct and of great value to optometrists. This test dovetails nicely with all near point tests and their treatment as suggested by Sheard, Jaques and others supply similar information, for one checks with the other and all indicate whether the Rx should be increased or decreased in plus or minus to co-ordinate the functions of accommodation, accommodative convergence and fusional convergence.

Our usual fixation distance is sixteen inches with observation at twenty inches, but it is often necessary and advisable to alter this arrangement to meet the particular near working distance of the patient. The test is also a valuable one in making a rapid check when a patient is wearing the glasses that have been prescribed; for it requires but a glance with the retinoscope to see whether the acc. and con. are in their proper relation one with the other.

We repeat the statement made in the early part of this paper to the effect that dynamic skiametry, practised as we have suggested, is not only an objective method of determining the necessary prescription for all close work and in the case of pre-presbyopes (in most cases) the proper distance prescription, but that it also affords another method and a valuable one of objectively studying the relationship existing between accommodation, accommodative convergence, and fusion convergence.

Pi Omicron Sigma Initiation

by JOHN C. RUSSEL

"Nude, and godivery with Ivory". What delightful recollections are stirred up in one's mind by the pen of a copywriter, ah, yes indeed.

But it took much more than soap and brushes to remove the cloak of magic, that magnificent garment known only to the Gods on Mount Olympus and the initiating committee of Pi Omicron Sigma Fraternity, whose substance made Achilles immortal.

And there are witnesses galore to bear out that no other vulnerable "Heel" was overlooked by the two grave Doctors who officiated at the investure. The mingling of howls and cat-calls from the hosts of bounding dervishes. Awful stentorian tones from a bespectacled gnome who sat, perched high, in the vast gloom, cheered only by a solitary candle. The diabolical cackle of a witch. (What, I wonder, is a man witch called?) A sizzling cauldron brewing mischief of peculiar flavor.

In a chamber not far removed Dr. Nniuq, eminent lapidary, seeking flaws in varicolored amber, while in the surgery Dr. Neerg, skillfully manipulated the scalpel. Who complained that Thousand Island dressing tasted like court-plaster? And can anyone remember who that chubby elf was that did such exquisite *"dunking"* to the tune of "And how is it now, my lad; Hot, or cold?" A fig for untuned pianos! And two for untuned pianists!!

The ride of the Valkyries! Only, whoever heard of Valkyries huddled under comforters in a Mack truck? And finally, "Tramp, tramp, tramp, the boys are marching." (Did they really?)

Once I read a book by Mr. Aldous Huxley in which a character named Philip—I think—happens, in his many perusings, upon the word *Trothadoodoo*. Now as Philip learned, and I too, incidentally, the term in itself means absolutely nothing literally, only for its intriguing qualities as the phonetic essence of foolishness. Had I an offspring, I should make him bear upon his escutcheon this incongruous conglomeration of letters until he could prove by undergoing the trials and tribulations of Pi Omicron Sigma initiation that he was a just and honorable man, and as fine a chap as any of our new batch.

Junior Newsettes

Christmas and the New Year seem to leave their marks upon certain teetoling Juniors who are recuperating from their "overexertions" during the recent vacation. (See P. M. who takes on all comers).

George Carvin has a very novel way of spending New Year's Eve. (For all information—inquire "Check—10c" K. K. Karvin—Box X 137).

We understand that the Boston Police are on the lookout for a certain Studebaker reported to have been doing 103.8 m/m per hour in race with "Doc's" Ford. Who won?? (Ask "Barney Oldfield" Rakusin).

Scallions to those Juniors who:—

Performed Sheiner's experiment during the recent "vaccination".

Went out New Year's Eve when they could have studied bichrome substraction. (Hi Doc!).

Came back to school Thursday when they could have had another weak-end.

Went to the Biltmore (Providence) on some society Deb's hard earned "kale".

Worked so hard in Concord only to come back for more. (Really—Smith!!!)

Didn't even dent their paddles on a certain Friday night? (Remember when, Doc Graham?)

Questions and Answers—

(Continued from preceding issue)

IV. How do we treat or rather exterminate an individual who is completely color blind?

Ans. In answering this question seriously with all due respect to Drs. Alphonse Aloysius Roymington in collaberation with Sir Fitzpatrick Bornstein, we have compiled the following five steps:—

1. Apply the anaesthesia, preferably with the Genophthalmic Retinascope, being very careful so as not to drive it down the optic track.

2. Smother patient deftly with "Ishe Harry" Volkel paper until soft gurgling sounds emit from patient's cavernous snoot.

3. Break a plus .75 X 185 degree into 6 pieces and rub over Sclera with the roughened edges, thus insuring a smooth film and then apply pepsodent antiseptic.

4. Take out Vitreous, spilling contents so as to allow room for oyster stew to be poured in later. (Thus increasing the index by virtue of angle alfalfa).

5. Replace removed parts backward and repeat subjective using Skeffington's 21 point technique. If patient still reports both colors the same, your patience will in all probability be taxed to the utmost so become furious; gouge eye out, crush skull with penknife and send him to Bernarr MacFadden or "Mumps" Cohen to be treated for Chicken Pox. (Send all questions to F. L. R. for enlightening answers.)

MEMENTO:

Gentlemen, take a case. Man aged 92, can't see, is deaf and can't read English. Has a wooden leg and insomnia. No headaches but finds that eating lobster gives him indigestion. Never worn, never examined, just out of jail. Lighting conditions good. Tried to escape but his wooden leg squealed. Likes to play golf, swim, eat, and knit. Referred by an M. D. THAT'S ALL I WANT TO KNOW.

DIAGNOSIS:

CONVERGENCE INSUFFICIENCY....SO THERE.

PI OMICRON SIGMA DANCE

A formal dinner-dance will be held on Friday 31st of January, at the new Blue Room, Hotel Westminster.

The Fraternity takes this opportunity to extend a cordial invitation to its graduate members, Faculty, as well as to the student body.

Perimetry and Campimetry

by Dr. Thomas Costa

Perimetry and Campimetry are the most neglected work in Optometry today. To my mind this should take first place in our Optometric work. This is the second time I have stressed this branch of work and due to the important part it plays in our Optometric picture, I am bringing it back to life again.

If one could appreciate the vast information derived from it in giving us a clear mental picture of the patient's visual and physical functions we would never leave it out of daily practice. One can say that Optometric interpretation of color fields may —yes—well, it can take the place that X-Ray analysis occupies in the field of Dentistry. In Optometry we have no X-Ray instrument, so science gave us the Campimeter.

In this short story I will try to bring out some of the most important diagnostic points which will enable us to see what this instrument can do for the optometrist in his daily office work.

Now, let us see how important this instrument really is. The questions might arise, such as, why should this instrument be used, when should I use this, etc. and the answers are:

First, we perhaps have all had cases and patients who have been examined by us and apparently it seemed that the prescription should and ought to be satisfactory but for some unknown reason the patient returns, complaining that he doesn't feel just right with the glasses just prescribed. We recheck and double check and find again that the prescription is o. k. but still the patient is not comfortable. You know there is *something* wrong but are unable to locate or diagnosis where the trouble lies. Now at this point we can answer the question.

You checked and rechecked but could not find anything that would alter your prescription but still you know there must be something wrong. In such cases will the Campimeter be of immense help to you. To get back to the question—when and why should you take a field test? Right now—when your patient cannot wear your correction.

The following are the rules, of which there are seven:

1. When the discomfort is greater than the refractive error justifies.
2. When the Amblyopia is greater than refractive error justifies.
3. When the Phoria does not yield to lens correction.
4. When a radical difference exists be between objective and subjective findings.
5. In all Squint cases.
6. In Myopia when minus lenses fail to relieve discomfort.
7. When reversion to fusion or ductions are low or minus in three or more areas.

Perhaps the answer to why the patient could not wear your correction can be selected from the rules. Now let us see what else this instrument can do.

The essentials of indirect vision, the technique of measuring form and color fields description and clinical demonstration of various types of methods and instruments, campimetry and blindspots analysis, estimating strabismus upon the campimeter, the effects of endogenous and exogenous toxemias, and their interpretation by color field measurements, pathology and impending pathology, neurasthenia and asthenopia, ametropia, and improper coordination of the various motor muscles of the eyes, intolerance of light and improper hygiene, lesions of the chiasm and their effects on relative size of the field and their characteristic color field prescription.

As we go on, we see that we can detect diseases, not diseases of the eyes only but those affecting the eyes as well as the body, such as syphilis, sinus diseases, multiple sclerosis, optic nerve atrophy, pituitary

diseases, central scotoma, diabetes and many others, and under the heading of Focal Infection, "Dental Focal Infections" we can also detect conditions such as pus sacks and a very common dental trouble, pyorrhea, infected teeth, infected pulp, decay or dental caries.

These conditions, as leading dentists tell us, cause a drainage into the system, poisoning our blood stream and in time, creating a toxic condition in the patient, manifested in headaches, tired drowsy feeling. Glasses will not relieve these symptoms unless the direct cause is removed and in these cases they require dental treatments.

As we progress further in this branch of work, we can classify under the heading of General Toxemia the following:

Tobacco
Alcohol
Coffee
Aspirin, Quinine
Cosmetics
Improper hygienic habits

These and many other conditions can be analyzed by doing color field work. There is no doubt that by use of the opthalmoscope, the observer has the means of examining and studying some of these changes, coupled with studying direct and indirect changes which may take place in the media, the retina and the choroid. Some of these changes are macroscopic and therefore open to direct inspection while others are microscopic or so minute as to escape observation by the use of the Opthalmoscope. It is in the latter class of cases that the study of the projected field of vision is determined by Perimetry and Campimetry and is of great value.

Gross fundus changes observed by the Opthalmoscope are substantiated and confirmed by objective Perimetry.

The variation in response during the course of an examination of the motor muscles of the eye can often be explained by studying the color fields. It offers tangible evidence as to the course to pursue in anomalies of the stimulus of the ductions. Evidence of impending pathology can be noted long before the most painstaking exploration of the fundus with the Opthalmoscope can offer assistance.

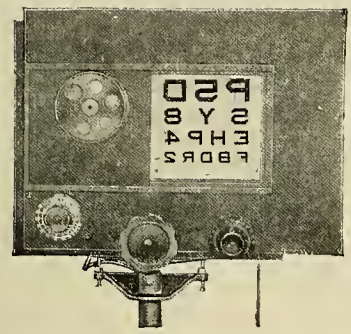
Regardless of the method employed in rendering optometric service, Perimetric diagrams will register positive evidence if the patient has been benefited or not. To my mind no ocular service is completed unless the color fields and relative size of the field are normal.

There is no better way for Optometry to get cooperation, both from the medical and dental professions than in making case reports to these professions, that is, referring cases where dental and medical attention is required, as well as in explaining the necessity of professional service to the patient.

RX Standards

Your professional knowledge, combined with precise instruments, will give your patients the desired results, if the exacting prescription is filled by our expert craftsmen and quality merchandise.

WILSON & HALFORD
OPTICAL COMPANY
387 Washington Street
Boston, Mass.



The intersecting lines through the characters prevent successful guessing.

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If

R. Stripling

If you can make a good subjective, but not have that your final test, If you can ease through keratometry, though the patient's gaze wanders like muscae volitantes, If you can 'scope an eye, and tell a "with", "against" and "neutral", and have no fears of tonicity (not knowing what it is), If you can find a lag, and comparing, make it fill the bill:

If you can chart fields without the common touch, and know what you have charted, If you can give those suppression squinters diplopia, so that they see twice as much as they did before, If you can make the retinal images equal (the anisometropes have no democracy yet), If you can duochrome, and place that yellow focus foveally, these tests mean SO much:

If you can find a hyper-phoria and scream delight and relish in the fact that here is food for thought, If you can smirk at blur points and make that T chart perform, If you can mark an axis and Doc Namias says "O. K.", If you can add that plus and keep on adding while all men doubt you (don't believe in Cross):

If you derive great pleasure from handling neurasthenics, and plan and scheme to save them from their folly, If you can tell when bifocals are required, without asking the patient what he desires, If you can theorize on optometric riddles and argue loud and long and say not much, If you can request substantial fees and collect without a moments hesitation, then I'm a fool, and you're a wizard, and what is more you'll be an optometrist my son!

Outwitting Fatigue

By Walter B. Pitkin, Professor in Journalism at Columbia University

Reprinted from Readers Digest

Nothing is more misleading than the habit of judging a man's energy by the frequency and ease with which he fatigues. One of the most revolutionary discoveries in psychology is that lack of close connection between the loss of energy and the sense of weariness or revulsion, accompanied by muscle pains and headaches and sometimes nausea, all of which men call "fatigue."

There are two kinds of fatigue which have little to do with each other. One is physiological, the other psychic, or what we commonly call "brain fag."

Physiological fatigue is a toxic state brought on by the failure of the body to slough the waste products of muscular effort fast enough. Every movement of the muscles burns up some glycogen formed in the liver by carbohydrate. A residue called lactic acid remains, which stiffens the muscle fibers. During hard work, the amount of lactic acid in the blood rises steadily and the muscle fibers cease to react. That is exhaustion. During rest, the lactic acid is removed by recombining with oxygen and eventually becoming glycogen again.

When a voluntary muscle is forced to contract rapidly and often, it lacks time to recover. So its power declines steadily. The accumulated toxins quickly disturb the highest integrative functions of the brain. The tired person first loses his interest in what he is doing and then tends to become irritable and moody. His motions lose their nicety, firmness and precision, and he is in grave danger of accident if he is employed in a factory. Speech deteriorates likewise, slips of the tongue increase, and various petty automatisms develop to vex the weary one.

People vary greatly in the speed with which they can clear their systems of this enemy of work, lactic acid. An athlete in trim will recover from exhaustion in six or seven minutes after strenuous exercise, while a sedentary person may not come back to freshness in twenty minutes. As the process of eliminating lactic acid goes on continuously a pause for two or three minutes just after spurts of effort is sufficient. Nothing is gained by longer rests.

Both bodily and mental fatigue have one factor in common. We grow weary in most cases as a result of what we may call one-sided conduct. When some segment of ourselves stands idly by while other segments work, impulses and tensions are set up that break down our co-ordinations, and we feel fatigue. Shifting from the reactions of the nerves of one sense organ to those of another, or from one set of muscles in reaction to another set, guarantees a steady variation of behavior in which no segment of ourselves is worked at the expense of other segments.

Fatigue is like sleepiness and falling asleep. It is a preservative mechanism—sometimes a restorative, too. It is a protest against monotonous functioning which is a danger in the ordinary environment.

Fatigue of body alone often occurs without any mental weariness whatever. Mental fatigue occurs both independent of and in conjunction with bodily weariness. "Brain fag" is the temporary failure of escape from stimuli and reflexes which have developed to the point of interfering with and even suppressing a host of others. It is not the burning of body fuel that exhausts us and produces feelings of fatigue. It is either muscle tensions set up by acts of attention to the mental problem or else it is boredom and a feeling of futility directed toward the task.

Were mental fatigue no more than a decline of energy, we should look for a sudden slowing up and then a quick stop. A man reading a book would go temporarily blind; if his brain failed, he would become unconscious; and he could not resume his book until he had assimilated some food. But this does not happen in ordinary mental

fatigue. Experiments show that a normal man can carry on any mental or physical activity within his ordinary range of power for several hours at top speed, and at the end of the period be performing his task as well as he did at first. This does not imply that there is no connection between energy and fatigue. It merely means that it is slighter and more localized than is generally supposed. Naturally, a man of extremely high energy can keep going at a distasteful task longer than a weakling can, and a healthy man can continue unpleasant work more successfully and for a longer period than a man in poor health.

Bad health, indeed, makes one susceptible to fatigue more than any other single factor, but, fantastic as it sounds, thousands of people in need of prompt medical attention don't even know there is anything the matter with them. Constantly fatigued, they blame the job, not the power plant. Out of 1,000 men employed in Cincinnati offices, only six were physically sound, and though 80 per cent of the group needed medical care, 72 per cent didn't know there was anything wrong. Out of another thousand examined, 965 needed immediate attention, and 88 per cent of them had no idea they were in any way abnormal.

These results are enormously significant. Most of the two thousand workers were subject to fatigue which greatly interfered with working efficiency. Even the young workers were in poor health. It was estimated that fully seventy per cent of those under thirty are hampered by major physical defects; nearly a fourth have minor defects; and ninety-five out of a hundred would profit by early treatment.

The afflictions of which most were unaware, varied from flat foot to sinus trouble. Nine out of ten had dental defects, 73 per cent had eye trouble, 36 per cent were flat-footed, 37 per cent were over or underweight, 46 per cent had respiratory defects, and so on, down a long and melancholy list. Why recite all this? Because it demonstrates that the average American worker is so dull of sensitivity that he doesn't even know when his power plant is badly out of order, and has to be told when it balks and stalls and fails to run smoothly.

Unless you are piggishly healthy, make it a rule to have a physical examination every year. And regardless of your health, visit your dentist every six months. Never economize on your power plant. There is no economy so stupid as that of ignoring the first principles of good health. The poorer your health, the more susceptible you are to fatigue. The converse is likewise true. Taking as par 100, the healthy city dweller has a hemoglobin count of about 90. Any drop below this is likely to reveal itself in some disturbance of energy.

Far and away the most frequent cause of fatigue is "outside activities"—that is, things done in leisure time for pleasure or for purely social purposes. This can easily be confirmed in the sorry records of students, housewives, athletes, and would-be artists. Over and over promising youths arrive at college portals, make a fair flash of a start as freshmen, and then imperceptibly slip behind until, after a year or two, they have joined the mighty ranks of obscure mediocrity—if not the inglorious squadrons of the flunked. Card games until two in the morning, dances, petting parties, whoopee after big college games, joy rides, movies, week-ends in the country, were each taking heavy toll in the form of calories. Say what you will as to the value of all such experiences, the fact remains that the one ultimate asset of life, energy, has been squandered.

The elders present a still stupider picture. They arrive at work worn out from the previous evening's late bridge or drinking bout and carry on through the day in half-hearted interest and easy exhaustion. Many a worker past forty does not realize the heavy price he pays for strenuous exercise in evenings and week-ends. Sensible people need few tips on how to reduce fatiguing outside activities. The duller your evenings, the better you sleep. The better you sleep, the more consistently efficient your work. Need more be said?

Other causes, such as physical activity on the job, emotional tension, body tension, and others must be studied by the individual in their relation to himself and his activities.

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